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WHAT IS CLAIMED IS:

1. A polymer composition comprising:

a polymer comprising at least one unit comprising $\{X[DDZRR']_3\}_n$, where:

X is a rare earth element;

D is one of the elements of Group VI_A;

Z is one of the elements of Group V_A;

R is a first fully halogenated organic group;

R' is a second fully halogenated organic group; and

at least one of a perfluoropolymer, a fluoropolymer, and an optical polymer.

2. A polymer according to claim 1, wherein X is chosen from lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium and aluminum.

3. A polymer according to claim 1, wherein R and R' are fluoroalkyl chains of a general composition C_xF_{2x+1} where $x \geq 1$.

4. The polymer according to claim 1, wherein R equals R'.

5. The polymer according to claim 1, wherein each of the first and second fully halogenated organic groups comprises at least one of the group of fluorine, chlorine, bromine, and mixtures thereof.

6. The polymer according to claim 5, wherein each of the first and second fully halogenated organic groups comprises fluorine.

7. The polymer according to claim 1, wherein D is the same or different and is oxygen or sulfur.

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& DUNNER, L.L.P.
1300 I STREET, N. W.
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8. The polymer according to claim 1, wherein Z is chosen from nitrogen and phosphorous.

9. The polymer according to claim 1, wherein the perfluoropolymer is chosen from poly[2,2-bistrifluoromethyl-4,5-difluoro-1,3-dioxole-co-tetrafluoroethylene and poly[2,3-(perfluoroalkenyl) perfluorotetrahydrofuran.

10. The polymer according to claim 1, wherein the fluoropolymer chosen from tetraflouroethylene/hexafluoropropylene/vinylidene copolymers, fluorinated acrylates, fluorinated methacrylates, fluorinated polymides, and fluorinated polyarylethers.

11. The polymer according to claim 1, wherein the optical polymer is chosen from polymethylmethacrylate, polystyrene, polycarbonate, and norbornene polymers.

12. The polymer according to claim 1, further comprising an amorphous polymer structure.

13. The polymer according to claim 1, wherein a ratio of the one of the perfluoropolymer, the fluoropolymer, and the optical polymer to the polymer is approximately 6 to 1 by weight.

14. A polymer blend comprising

a polymer comprising at least one unit comprising $\{XY[DDZRR']_3\}_n$, where:

X is a first rare earth element;

Y is a second rare earth element;

D is one of the elements of Group VI_A;

Z is one of the elements of Group V_A;

R is a first fully halogenated organic group;

R' is a second fully halogenated organic group; and

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at least one of a perfluoropolymer, a flouropolymer, and an optical polymer.

15. The polymer blend according to claim 14, wherein X is chosen from lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium and aluminum.

16. The polymer blend according to claim 14, wherein Y is chosen from lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, and aluminum.

17. The polymer blend according to claim 14, wherein X and Y are different rare earth elements.

18. The polymer blend according to claim 14, wherein R and R' are fluoroalkyl chains of a general composition C_xF_{2x+1} where $x \geq 1$.

19. The polymer blend according to claim 18, wherein R equals R'.

20. The polymer blend according to claim 14, wherein each of the first and second fully halogenated organic groups comprising at least one of fluorine, chlorine, bromine, and mixtures thereof.

21. The polymer blend according to claim 20, wherein each of the first and second fully halogenated organic groups comprises fluorine.

22. The polymer blend according to claim 14, wherein a ratio of X to Y is between approximately 20 to 1 and 20 to 3.

23. The polymer blend according to claim 22, wherein the ratio of X to Y is approximately 20 to 2.

24. The polymer blend according to claim 14, wherein D is one of oxygen and sulfur.

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25. The polymer blend according to claim 14, wherein Z is one of nitrogen and phosphorous.

26. The polymer blend according to claim 14, wherein the perfluoropolymer is chosen from poly[2,2-bistrifluoromethyl-4,5-difluoro-1,3-dioxole-co-tetrafluoroethylene and poly[2,3-(perfluoroalkenyl) perfluorotetrahydrofuran.

27. The polymer blend according to claim 14, wherein the fluoropolymer is chosen from tetraflouroethylene/hexafluoropropylene/vinylidene copolymers, fluorinated acrylates, fluorinated methacrylates, fluorinated polymides, and fluorinated polyarylethers.

28. The polymer blend according to claim 14, wherein the optical polymer is chosen from polymethylmethacrylate, polystyrene, polycarbonate, and norbornene polymers.

29 The polymer blend according to claim 14, further comprising an amorphous polymer structure.

30. The polymer blend according to claim 14, wherein a ratio of the one of the perfluoropolymer, the fluoropolymer, and the optical polymer to the polymer is approximately 6 to 1 by weight.

31. A polymer blend formed by:

dissolving a rare earth perfluoropolymer in a first solvent, the rare earth perfluoropolymer having a general composition $\{XY[DDZRR']_3\}_n$, where:

X is a first rare earth element;

Y is a second rare earth element;

D is one of the elements of Group VI_A;

Z is one of the elements of Group V_A;

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R is a first fully halogenated organic group;

R' is a second fully halogenated organic group; and

forming a first solution; and

dissolving a copolymer in a second solvent to form a second solution, the first and second solvents being miscible cosolvents;

combining the first and second solutions; and

dissolving the first and second solvents.

32. The polymer blend according to claim 31, wherein the copolymer is chosen from a perfluoropolymer, a fluoropolymer, and an optical polymer.

33. The polymer blend according to claim 31, wherein the first solvent is the same as the second solvent.

34. The polymer blend according to claim 33, wherein the first and second solvents are dimethyl acetamide.

35. The polymer blend according to claim 31, wherein a weight ratio of the rare earth perfluoropolymer and the copolymer after dissolving the first and second solvents is approximately 1 to 6.

36. A polymer blend formed by:

Dissolving a rare earth perfluoropolymer in a first solvent, the rare earth perfluoropolymer comprising at least one unit comprising $\{X[DDZRR']_3\}_n$, where:

X is a rare earth element:

D is at least one of the elements of Group VI_A;

Z is at least one of the elements of Group V_A;

R is a first fully halogenated organic group;

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R' is a second fully halogenated organic group;

Wherein the rare earth perfluoropolymer and the copolymer have similar processing windows and the rare earth perfluoropolymer and the copolymer are blended in a shearing process.

37. The polymer blend according to claim 36, wherein each of the rare earth perfluoropolymer and the copolymer are in the form of one of powder and pellets.

38. The polymer blend according to claim 37, wherein the shearing process is a screw extrusion.

39. A polymer blend formed by:

dissolving a rare earth perfluoropolymer in a first solvent, the rare earth perfluoropolymer comprising at least one unit comprising $\{X[DDZRR']_3\}_n$, where:

X is a rare earth element;

D is one of the elements of Group VI_A;

Z is one of the elements of Group V_A;

R is a first fully halogenated organic group;

R' is a second fully halogenated organic group; and

forming a first solution; and

dissolving a copolymer in a second solvent to form a second solution, the first and second solvents being miscible cosolvents;

combining the first and second solutions; and

dissolving the first and second solvents.

40. The polymer blend according to claim 39, wherein the copolymer is chosen from a perfluoropolymer, a flouropolymer, and an optical polymer.

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41. The polymer blend according to claim 39, wherein the first solvent is the same as the second solvent.

42. The polymer blend according to claim 41, wherein the first and second solvents are dimethyl acetamide.

43. The polymer blend according to claim 39, wherein a weight ratio of the rare earth perfluoropolymer and the copolymer after dissolving the first and second solvents is approximately 1 to 6.

44. The polymer blend according to claim 43, wherein each of the rare earth perfluoropolymer and the copolymer are in the form of one of powder and pellets.

45. The polymer blend according to claim 43, wherein the shearing process is a screw extrusion.

46. A method of manufacturing a polymer blend comprising:

providing a rare earth perfluoropolymer in a first solvent, the rare earth perfluoropolymer comprising at least one unit comprising $\{XY[DDZRR']_3\}_n$, where:

X is a first rare earth element;

Y is a second rare earth element;

D is one of the elements of Group VI_A;

Z is one of the elements of Group V_A;

R is a first fully halogenated organic group;

R' is a second fully halogenated organic group; and

providing a copolymer in a second solvent, the first and second solvents being miscible cosolvents;

combining the first and second solutions; and

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dissolving the first and second solvents.

47. A method of manufacturing a polymer blend comprising:

providing a rare earth perfluoropolymer in a first solvent, the rare earth perfluoropolymer comprising at least one unit comprising $\{X\ [DDZRR']_3\}_n$, where:

X is a rare earth element;

D is one of the elements of Group VI_A;

Z is one of the elements of Group V_A;

R is a first fully halogenated organic group;

R' is a second fully halogenated organic group; and

providing a copolymer in a second solvent, the first and second solvents being miscible cosolvents;

combining the first and second solutions; and

dissolving the first and second solvents.

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